# **ABSTRACTS**

This section of the JOURNAL is published in collaboration with the two abstracting Journals, Abstracts of World Medicine and Ophthalmic Literature, published by the British Medical Association. The abstracts are divided into the following sections:

Syphilis (Clinical, Therapy, Serology, Pathology, Experimental).

Gonorrhoea.

Non-Gonococcal Urethritis and Allied Conditions.

Chemotherapy.

Public Health and Social Aspects.

Miscellaneous.

After each subsection of abstracts follows a list of articles that have been noted but not abstracted.

# **SYPHILIS** (Clinical)

Syphilitic Gumma of the Brain. (Gomme syphilitique cerebrale). SALLES, M., and PECKER, J. (1963). *Neuro-chirurgie*, **9**, 91.

Potts' Disease of the Spine simulated by Tabetic Vertebral Arthropathy. (La forme pseudo-pottique de l'arthropathie vertébrale tabétique). VIGNON, G., GAUTHIER, J., CHAPUY, P., and CALVEL, V. (1963). Rev. lyon. Méd., 12, 315. 9 figs, 7 refs.

Morbidity of Syphilis during the Period 1951-1960. Statistical Data from the Dermatological Clinic of the University of Parma. (Morbidita luetica nel periodo 1951-1960. Dati statistici della Clinicà Dermatologica di Parma.) MARCHESELLI, W. (1963). Minerva derm., 38, 186. 3 refs.

Modified Incidence of Syphilis in the Present State of Prophylaxis. (Sulla modificata incidenza della lue nell'attuale situazione della profilassi.) Di Sapio, G. (1961). Acta med. ital. Mal. infett., ·6, 301. 6 refs.

Present Problems of Syphilis. (Il problema attuale della sifilde.) CAPUZZO, A. (1962). G. veneto Sci. med., 17, 519. 33 refs.

Epidemiology and Control of Contagious Syphilis in Chile. (Epidemiologia y control de la sifilis contagiosa en Chile.) ROMAN, J., and MIRANDA, M. (1963). *Bol. Ofic. sanit. panamer.*, **54**, 383. 6 figs.

Syphilitic Rupia. ("Rupia" syphilitique.) THIVOLET, J., and TOUBOUL, P. (1963). Lyon méd., 209, 930.

Bacterial Infections of the Skin and Syphilis. VICKERS, C. F. H., and STOUGHTON, R. B. (1963). *Med. Clin. N. Amer.*, 47, 1343. 21 refs.

Calcification of the Aorta. (Sulle calcificazioni aortiche.) NIERI, G. (1963). Minerva med., 54, 2011. 17 figs, 33 refs.

# SYPHILIS (Therapy)

Use of a Bacterial Pyrogen in the Treatment of Neurosyphilis. [In English.] DEWHURST, K. (1963). *Psychiat.* et Neurol. (Basel), 145, 18. 30 refs.

A number of workers claim that after some post-war decline the incidence of neurosyphilis is increasing. The present author describes four cases of chronic neurosyphilis with mental symptoms treated with a combination of penicillin and fever; all four patients had failed to respond to penicillin alone. Fever was induced by intravenous injection of a purified lipopolysaccharide obtained from Salmonella abortus equi. After a satisfactory response to a test injection of 0·2 μg. (0·4 ml.) Salmonella pyrogen. treatment was begun with 1 ml. intravenously; this usually produced a temperature of 100 to 101°F. (37.8 to  $38 \cdot 3^{\circ}$ C.) in  $2\frac{1}{2}$  to 3 hours, the temperature returning to normal in 6 to 7 hours. Intramuscular injections of penicillin were given with each episode of fever. Satisfactory levels of fever were maintained by increasing the dosage of pyrogen by 0.5 to 1 ml. at each subsequent injection, usually given on alternate days.

It is claimed that this method is free from the dangers associated with other artificial methods of inducing fever—for example malaria—and is suitable for patients in poor physical condition. No anaphylactic reactions have been reported and less specialized nursing care is needed than with malaria therapy. The only contraindications are hepatic disease, active tuberculosis, recent peptic ulceration, and cerebrovascular insufficiency.

It is considered that the beneficial effects of fever in neurosyphilis may be due to increased cerebral blood flow and consequent increased concentration of penicillin in the cerebrospinal fluid.

A. J. Gill

Research Needs in Syphilis. BEERMAN, H. (1963). Publ. Hlth Rep. (Wash.), 78, 305. 71 refs.

# SYPHILIS (Serology)

Evaluation of the Fluorescent Treponemal Antibody Test (FTA). [In English.] Nielson, H. A., and Idsøe, O. (1963). Acta path. microbiol. scand., 57, 331. 26 refs. The authors summarize in Tables the published results of other workers with the fluorescent treponemal antibody (F.T.A.) test in comparison with the treponemal immobilization (T.P.I.) test. From these results it would appear that the F.T.A. test is more sensitive than the T.P.I. test in primary syphilis, though not in the other stages, and is also more specific. Differences in the techniques used by the various authors are pointed out.

An examination of the F.T.A. test was carried out at the State Serum Institute, Copenhagen. The technique used is described, the points stressed being that the slides were not rotated, that "tween 80" was not used, and that the tests were carried out at room temperature, usually at a serum dilution of 1:200. In addition to the F.T.A. test the T.P.I. test, cardiolipin Wassermann reaction, Kahn test, and Meinicke test were carried out in all cases. Altogether 1,194 sera and 76 specimens of spinal fluid from a total of 1,237 persons were tested. The results are presented in tables and discussed.

In 44 cases of untreated primary syphilis the F.T.A. test was clearly superior to the T.P.I. and classic tests. In all but three out of 64 cases of treated secondary syphilis the results of the F.T.A. and T.P.I. tests agreed. In 41 cases of untreated late syphilis the results of all the tests agreed, but in 21 treated cases the classic tests gave fewer positive results. In cases of treated chronic syphilis disagreement between the results of the F.T.A. and T.P.I. tests, the former being negative and the latter positive, increased in frequency with the time since infection and treatment. However, in eight such cases, it was found that although the sera were non-reactive in the F.T.A. test in a dilution of 1:200, they gave positive results in a dilution of 1:10 or undiluted.

The mechanism of treponemal fluorescence is discussed and the advisability or otherwise of repeated heat inactivation of sera before retesting, the value of "tween 80", the need for rotation of the slides, and other technical points are considered. The authors do not consider the F.T.A. test to be superior in all circumstances to the T.P.I. test.

F. Hillman

- Immunofluorescence Test applied to the Serological Diagnosis of Syphilis. (Le test d'immunofluorescence appliqué au diagnostic sérologique de la syphilis.) VAISMAN, A., and PARIS-HAMELIN, A. (1963). *Proph. sanit. morale*, 35, 189. 3 refs.
- Results of a 3-year Survey (1959–1961) of the Serodiagnosis of Syphilis in Florence. (Considerazioni sui risultati di un triennio (1959–1961) di indagini sierologiche per l'accertamento della lue in varie categorie della popolazione di Firenze.) Lo Monaco, G. B., and BERDONDINI, I. (1962). Boll. Accad. med. pistoiese Pacini. 33, 139. 27 refs.

- Serology of Syphilis with a Mixed Lipoid-proteic Antigen. Ottolenghi, F. (1962). *Ital. gen. Rev. Derm.*, 3, 14.
- False Positive Serological Reactions for Syphilis in Persons Vaccinated against Leptospiroses. (Reazione sierologiche per la lues falsamente positive nei vaccinati contro la leptospirosi.) CHIGNOLI, V., and RONGIONE, A. (1961). Acta med. ital. Mal. infett., 16, 313. 17 refs.
- Clinical and Serological Diagnosis of Neurosyphilis. (Klinische und serologische Diagnostik der Neurolues.) HIPPIUS, H. (1963). *Dtsch. med. J.*, **14**, 429. 26 refs.
- Serology of Syphilis. (La sierologia luetica.) Selmi, G., and Raspadori, F. (1963). *Rif. med.*, 77, 695. 17 refs.
- Syphilis Serology. OKEY, C. H. (1963). *J. Maine med. Ass.*, **54**, 127. 1 ref.
- Classic Serology of Syphilis after Treatment with Salvarsan and with Penicillin. (Die klassische Syphilisserologie nach Salvarsan- und nach Penicillin-behandlung.) Luger, A., and Ebner, H. (1963). Wien. klin. Wschr., 75, 629. 7 figs, bibl.
- Problem of Specificity and Reactivity in Reagin Reactions. (Zum Problem der Spezifität und Reaktivität bei Reagin-Reaktionen.) LUGER, A., and MAYER, H. 1963). Z. Haut-u. Geschl.-Kr., 17, 94. Bibl.
- Serologic Tests for Syphilis and Their Interpretation. Bellomy, B. B. (1963). J. Tenn. med. Ass., 56, 275. 6 refs.
- Serologic Tests for Syphilis in Leprosy. CHACKO, C. W., and YOGESWARI, L. (1963). *Indian J. Derm. Venereol.*, **29**, 81. 13 refs.
- Immunity in Syphilis. Ottolenghi-Lodigiani, F. (1961). Ital. gen. Rev. Derm., 2, 7.
- Serologic Tests for Syphilis. NARANG, S. S., BHARGAVA, N. C., and RAO, M. S. (1963). *Indian J. Derm. Venereol.*, 29, 97. 1 fig., 13 refs.
- Technique of the Fluorescent Treponemal Antibody (F.T.A.) Test (Considerazioni tecniche sul F.T.A. e accorgimenti pratici per la fissazione e la migliore lettura dei vetrini.) GUARGUAGLINI, M. (1963). Ann. Sclavo, 5, 246. 1 fig., 5 refs.
- Clinical Significance of the Nelson-Mayer Test in Some Forms of Syphilis. (Wartość kliniczna odczynu Nelsona-Mayera w niektórych postaciach kiły). Kierśnicka, I., and Ruczkowska, J. (1962). *Przegl. derm.*, **59**, 109. 28 refs.

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- Activating Effect of Cerebrospinal Fluid on Alexin in the Complement-Fixation Test. I. Influence of Magnesium Ions. (O poder activante do liquido cefalorraqueano sobre a alexina na reaçao de fixação de complemento. I. Influéncia do íon magnésio.) BEI, A., DOS REIS, J. B., and DOS REIS FILHO, I. (1963). Rev. paul. Med., 62, 298. 2 figs, 12 refs.
- II. Influence of Total CO<sub>2</sub> Content of the Cerebrospinal Fluid. (II. Influéncia da concentração do CO<sub>2</sub> total do líquor.) DOS REIS, J. B., and TRAVASSOS, F. DE M. (1963). Rev. paul. Med., 62, 304. 9 refs.
- Fluorescent Antibody Technique using Dried Blood. (La technique des anticorps fluorescents pratiquée sur sang desséché et élué.) VAISMAN, A., HAMELIN, A., and GUTHE, T. (1963). Bull. Wld Hlth Org., 29, 1. 20 refs.
- Clinical, Epidemiological, and Social Hygiene Aspects of the Serological Diagnosis of Syphilis. (Die klinische, epidemiologische und sozialhygienische Bedeutung der serologischen Syphilis-Diagnostik.) Boros, B. von, (1963). Ärzt. Forsch., 17, 469. 5 figs, 48 refs.

# SYPHILIS (Pathology)

- On the Origin of the Human Treponematoses. HACKETT, C. J. (1963). Bull. Wld Hlth Org., 29, 7. 7 figs, bibl.
- Study of a recently Isolated Strain of Treponema pertenue. (Etude d'une souche de Treponema pertenue récemment isolée). Gastinel, P., Vaisman, A., Hamelin, A., and Dunoyer, F. (1963). Proph. sanit. morale, 35, 182. 3 refs.
- Evaluation of the Significance of Paraprotein C in Syphilis and Certain Dermatoses. (Ocena wartości paraproteiny C w kile i niektórych dermatozach.) Powroźny, W., Przesmycka, I., and Przesmycki, J. (1962). *Przegl. derm.*, **59**, 137. 8 refs.
- Studies of Benzyl Penicillin G Levels in the Blood of Patients with Early Syphilis. (Badania nad poziomem penicyliny benzatynowej G we krwi chorych z kiłą wczesną.) Bowszyc, J., and Samet, A. (1962). Przegl. derm., 59, 127. 5 figs, 20 refs.

#### **GONORRHOEA**

Alternative Antibiotics for Use in Treatment of Acute Gonorrhoeal Urethritis in Males. Moore, M. B., Jr., Short, D. H., Matheson, T. E., Knox, J. M., and Vanderstoep, E. M. (1963). *Publ. Hlth Rep.* (*Wash.*), 78, 261. 6 refs.

The drug of choice for the treatment of gonorrhoea should be one which is easily administered in a single dose, is relatively non-toxic, and is reasonable in cost. Penicillin most nearly satisfies these criteria but because of the increasing incidence of sensitization to penicillin

and the fact that some strains of gonococci show diminished sensitivity to the drug, the authors, at Baylor University College of Medicine, Houston, Texas, tried broadspectrum antibiotics in 1,056 male patients with gonorrhoeal urethritis. One group of 469 patients received 900 mg. demethylchlortetracycline in one dose; 360 were given a single injection of 1,200,000 units of procaine benzylpenicillin with aluminium monostearate (P.A.M.): 121 received 500 mg tetracycline with amphotericin B by mouth every 4 hours for 24 hours; and 106 were given 500 mg. tetracycline without amphotericin B every 4 hours for 24 hours. If the patient did not return to the clinic it was assumed that he was cured; a patient was regarded as a treatment failure if he returned within 30 days of treatment and culture of urethral secretion revealed gonococci. The authors state that only about 50 per cent. of the patients voluntarily returned to the clinic and no pressure was put upon those who failed to return. In fact, none of those receiving tetracycline with amphotericin B and only one of those given tetracycline alone returned for assessment within 7 days. [In these circumstances conclusions drawn as to the efficacy of these methods of treatment are hardly convincing.] The "return rates" after 30 days were 12.4 per cent. in the group treated with demethylchlortetracycline, 10.8 per cent. in that given P.A.M., 10.8 per cent, in the group receiving tetracycline with amphotericin B, and 11.3 per cent. in that given tetracycline alone. The authors conclude that the efficacy of the oral antibiotics "closely approximated that of P.A.M. by injection". A. J. King

Isolation of Neisseria catarrhalis from Three Patients with Urethritis and a Clinical Syndrome resembling Gonorrhoea, Graber, C. D., Scott, R. C., Dunkelberg, W. E., Jr., and Dirks, K. R. (1963). Amer. J. clin. Path., 39, 360. 9 refs.

In a study of possible increasing penicillin resistance of the gonococcus in over 200 U.S. military personnel in Europe, 95 per cent. were found to have typical *Neisseria gonorrhoeae* infections on the basis of smears, cultures (including biochemical reactions), and immunofluorescence testing. Four cultures showed *Mima polymorpha* var. oxidans and three N. catarrhalis.

This paper describes in detail the case histories and the clinical and laboratory findings in the three latter cases. In all three penicillin-resistant gonorrhoea had been diagnosed on the basis of smears, cultures, and oxidase reaction, although dextrose was not fermented by any of the organisms. When the direct fluorescein-labelled anti-gonococcal technique was used, smears from all three cases fluoresced brilliantly. Subsequent growth on peptone agar enabled the identification of *N. catarrhalis* insensitive to penicillin but sensitive to tetracyclines.

The authors conclude that *N. catarrhalis* was the causal organism and therefore must be added to the list of organisms which may cause confusion in the diagnosis of gonorrhoea by smears and cultures. [They do not explain the lack of specificity of the conjugate for *N. gonorhoeae*.]

Leslie Watt

Gonorrhoea Past and Present in Norway, with special reference to Oslo. (Gonoré i Norge før og nå, med særlig omtale av Oslo.) GJESSING, H. C. (1963). Nord. Med., 70, 866. 2 figs, 13 refs.

Dispensary Treatment of Gonorrhoea. STAHELI, L. T. (1963). Milit. Med., 128, 792. 10 refs.

Penicillin Resistance to Gonorrhoea. SINGH, R. (1963). *Indian J. Derm. Venereol.*, 29, 105. 12 refs.

Blennorrhagia. (Blenorragia.) Annotation. (1963). *Medicina* (*Madr.*), **5**, 197.

# NON-GONOCOCCAL URETHRITIS AND ALLIED CONDITIONS

Arthritis associated with Venereal Disease: a Comparative Study of Gonococcal Arthritis and Reiter's Syndrome. WRIGHT, V. (1963) Ann. rheum. Dis., 22, 77. 3 figs. bibl. At Johns Hopkins Hospital, Baltimore, 214 cases in which gonococcal arthritis had been diagnosed were reexamined. A total of 62 were excluded from the final analysis because investigations were incomplete or other conditions were present. The remaining 152 were classified as follows:

- (1) gonococcal arthritis (29 cases);
- (2) probable gonococcal arthritis (72);
- (3) Reiter's syndrome (51).

The clinical picture in cases of gonococcal arthritis, in which gonococci were recovered from a joint or tendon sheath effusion, was very similar to that in the cases classified as probable gonococcal arthritis (in which gonococci were not recovered from a joint but genital gonorrhoea was present). The incidence of gonococcal arthritis when compared with that of Reiter's syndrome was found to be higher in females than males and also higher in coloured than in white patients. Arthritis when associated with gonorrhoea often began acutely in one joint, with pyrexia. In Reiter's syndrome many joints were involved, including sometimes the heel and lumbar spine; the arthritis was often symmetrical and pyrexia was less marked. In gonococcal arthritis the acute attack quickly subsided, recurrences were rare, and residual damage was not prominent, in contrast to Reiter's syndrome. Circinate balanitis and keratodermia blennorrhagica were seen only in cases of Reiter's syndrome. Ocular complications were unusual in patients with gonococcal arthritis but were fairly common in those with Reiter's syndrome. G. W. Csonka

Virus Urethritis. (Les urétrites à virus). MALEVILLE, M. J. (1963). J. Méd. Bordeaux, 140, 937. Bibl.

#### **CHEMOTHERAPY**

Indirect Basophil Degranulation Test for Allergy to Penicillin and Other Drugs. SHELLEY, W. B. (1963). J. Amer. med Ass., 184, 171. 4 figs, 17 refs.

The author, at the University of Pennysylvania School of Medicine, Philadelphia, has evaluated in vitro tests for

allergy based on degranulation of basophil granulocytes in the presence of antigen-antibody union. Included in the study were 275 subjects with presumptive sensitivity to penicillin, 138 of whom were tested by the direct fixation-filtration method and 137 by the basophil serological test, which is an indirect 3-drop test. The control group of seventy subjects had recently been given penicillin without incident.

The indirect basophil test requires one drop (0.003 ml.)of patient's serum, one drop of a solution of penicillin (or other drug) in either physiological saline or buffered saline at pH 7.0, and one drop of rabbit buffy coat containing test basophil cells ("polyethylene tubing, inside diameter is 1.57 mm. and outside diameter is 2.08 mm., length 7 cm., in glass shield, 20 seconds spin at 11,500 r.p.m. permits separation"). The antigen used (potassium benzylpenicillin) must be pure and free from excipient. The serum may be stored at  $-20^{\circ}$ C.  $(-4^{\circ}F.)$  for months without loss of antibody, but deteriorates in 4 days at 36.6°C. (98°F.) After supravital staining with neutral red, the readings are made by observing 20 to 50 basophils over a wide field range, and, together with those of control preparations, should be completed within 10 minutes. since non-specific degranulation may occur if the preparation is allowed to stand. The test is considered positive when 30 per cent. of basophil cells show changes -swelling, amoeboid movement, nuclear prominence, peripheral palisading of granules and facing of cell staining. In more severe reactions extrusion of (histaminecontaining) granules is either slow or "explosive".

Of the 137 sera tested by the indirect method, sixty gave a positive reaction and 77 were non-reactive, but in the majority of these latter cases more than 2 years had elapsed since the alleged anaphylaxis. Of the 138 subjects tested by the direct fixation test the findings were positive in 38, negative in ninety, and unsatisfactory (due to infrequent basophils) in the remaining ten. Of the seventy control subjects, 66 gave a negative response to the indirect degranulation test; the remaining four were positive to both tests.

It was possible to make quantitative estimations of sensitivity in the indirect test by diluting either the serum or the antigen. Following a severe anaphylactic incident, anergy was shown by five patients for 1 to 2 weeks, but thereafter antibody developed in increasing titre. Cross-sensitivity to six other penicillin preparations was present in seven cases, thus confirming the view that the penicillin nucleus (6-amino-penicillanic acid) is the "antigenic determinant" and that side-chains are without effect. Sensitivity to drugs other than the penicillins was similarly determined.

The advantages claimed for the indirect 3-drop test are that it is a laboratory test, is without risk to the patient, and requires only a sample of serum; it may be used clinically to predict anaphylaxis, to identify an allergy-producing drug among others being given, and to evaluate drugs used in the treatment of anaphylaxis. A negative response is held to indicate absence of antibody to the drug in question at the time of testing only, and a positive reaction to point to one factor determining potential anaphylaxis (others being the total basophil

granulocyte count, their histamine content and vascular sensitivity to histamine). *V. Reade* 

Herxheimer Reactions induced by Small Percutaneous Injections of Penicillin. (Ricerche sulla possibilità di scatenare la reazione di Herxheimer con piccole dosi di penicillina percutanea.) MARTINA, G., and Bossi, G. (1963). Minerva derm., 38, 193. Bibl.

# PUBLIC HEALTH AND SOCIAL ASPECTS

Epidemiology of Syphilis and Gonorrhoea in North Rhine-Westphalia from 1947 to 1962. (Die Epidemiologie der Lues und Gonorrhoe in Nordrhein-Westfalen von 1947–1962.) GEDICKE, K. (1963). Öff. Gesundh.-Dienst., 25, 355. 5 figs, 8 refs.

Diseases, Disorders, and Sexual Deviation. (Malattie, disfunzioni e deviazioni sessuali.) AGOSTINI, A. (1963). *Fracastoro*, **56**, 142. 4 refs.

Recent Advances in Diagnosis and Treatment of Venereal Diseases. ROSENBLUM, B. F. (1963). Publ. Hlth Rep. (Wash.), 78, 611. 10 refs.

Advance of the Venereal Diseases. CATTERALL, R. D. (1963). Lancet, 2, 103. 2 figs, 34 refs.

# **MISCELLANEOUS**

Venereal Spread of Urogenital Trichomoniasis. (Über die venerische Verbreitung der urogenitalen Trichomoniasis.) Teras, J., Rõigas, E., and Laan, I. (1963). Derm. Wschr., 147, 386. 4 figs, 20 refs.

An epidemiological study of 1,157 patients with genital trichomoniasis in this paper from the Institute for Experimental and Clinical Medicine of the Estonian Academy of Science, Tallin, is presented. There were twice as many women than men in the series. The majority of the women had acute or subacute trichomonal vaginitis which was easily diagnosed on the first examination. In the few who had latent trichomoniasis repeated examinations were usually necessary to establish the diagnosis. In the

men genital trichomoniasis was symptomatically milder than in the women, and a high proportion had no symptoms at all. Cultures were found to be useful for diagnosis in both sexes, but particularly in men, in 28 per cent. of whom the disease could not be diagnosed by direct microscopical examination.

A thorough study of 1,284 sexual contacts of the patients revealed that 73 per cent. had trichomoniasis. In all, 61 group infections could be traced, some of which were very extensive; thus in one group 99 sexual contacts were found to have trichomoniasis and in another there were 27 infected patients. Casual sexual contacts were as important in spreading the disease as more stable sexual partnerships.

The authors consider that to combat trichomoniasis successfully epidemiological measures as strict as for other venereal diseases such as gonorrhoea are necessary.

G. W. Csonka

Direct and Indirect Fluorescent-Antibody Techniques for the Psittacosis-lymphogranuloma Venereum-Trachoma Group of Agents. Ross, M. R., and BOREMAN, E. K. (1963). J. Bact., 85, 851. 19 refs.

This technique may be used only in young cultures, as in the older culture there are too many artefacts. Indirect fluorescent antibody technique for the detection of antibody was found to be intermediate in sensitivity between hæmagglutination-inhibition and complement-fixation methods. There were no cross reactions with influenza A and B, para-influenza 1, 2, 3, Q fever or primary atypical pneumonia agent.

J. H. Kelsey

Trichomonal Urethritis in Men. Ayyangar, M. C. R. (1963). J. Indian med. Ass., 41, 63. 22 refs.

Nomenclature of Isolates of Virus from Trachoma and Inclusion Blennorrhoea. Collier, L. H. (1963). *Nature* (*Lond.*), 198, 1229. 1 ref.

Treatment of Chancroid. WILLCOX, R. R. (1963). Brit. J. clin. Pract., 17, 455. 23 refs.

Neurological Involvement in Behçet's Syndrome. Lu, A. T., and Barasch, S. (1963). Bull. Los Angeles neurol. Soc., 28, 85. 1 fig., 25 refs.